

XYR 6000 Pressure Transmitter

Models

**STDW924, STDW930, STDW974, STGW944,
STGW974, STGW94L, STGW97L, STGW98L,
STAW94L**

ST 3000 Smart Pressure Transmitter

Models (Revision S or later)

**STD110, STD120, STD125, STD130, STD170,
STD904, STD924, STD930, STD974, STG944,
STG974**

34-ST-33-50

9/14/07

Kit Instruction (Meter Body Replacement Parts)

Overview

This kit instruction provides general (disassembly/assembly) procedures for replacing meter body and process head parts. These parts for the ST 3000 and XYR 6000 are virtually identical, however, the transmitters themselves are different.

Purpose / Scope of this kit Instruction

All of the parts included in the kits are components of the Meter Body and associated Process Head assemblies. None of the kits include components of the Electronic Housing assembly. However, the procedures include disassembly/assembly instructions for the Electronics Housing as required for replacement of parts included in the kits.

Applicability

These instructions apply to the models listed in the title above.

Parts Replacement Kits

CAUTION

Improper selection or application of replacement parts could cause damage to property and equipment.

WARNING

Improper selection or application of replacement parts could cause serious injury or death to personnel.

The materials and manufacturing methods of parts vary with transmitter applications.

When performing any of the procedures in this kit Instruction, ensure that the proper parts are selected for each application.

Required publications

For ST 3000 parts see Figure 1, Figure 2 and Table 1.

Note that the parts listed do not include the suffix (“tab number”, for example, -001) that specifies applicability.

For detailed parts lists, refer to the model selection guide and the following publications.

Manual #	Addendum for Model		Publication Title
	STD110	STD110 STD120 STD125 STD130 STD170 STD904 STD924 STD930 STD974 STG944 STG974	
34-ST-25-14	34-ST-99-18	34-ST-99-22	ST 3000 Smart Transmitter, Release 300 and Smart Field communicator Model STS103 User Manual
34-ST-25-15	34-ST-99-19	34-ST-99-23	ST 3000 FF Transmitter, with Foundation Fieldbus Option Installation and Device Reference Guide
34-ST-25-17	34-ST-99-20	34-ST-99-24	ST 3000 Smart Transmitter, Release 300 with HART Communications Option, STS103
34-ST-33-39	34-ST-99-21	34-ST-99-25	ST 3000 Smart Transmitter, Release 300 and Smart Field communicator Model STS103 Installation Guide

For XYR 6000 parts see Figure 3, Figure 4, Figure 5, Table 1 and Table 2.

For detailed XYR 6000 parts list see the following publication.

Manual #	Addendum for Model		Publication Title
34-XY-25-15	n/a	n/a	OneWireless XYR 6000 Pressure Transmitter User's Manual

Sequence of Procedures

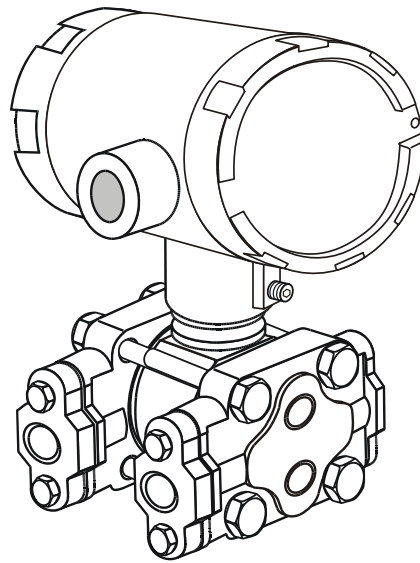
Table 3 through Table 8 describe procedures for replacing the parts included in the associated kit. Because requirements for replacement vary with circumstances, the sequence of procedures is at the discretion of the installer.

In all cases, we recommend that the transmitter be disconnected from service and moved to a clean area before disassembly.

<u>Table</u>	<u>Page</u>
Table 1 Kit parts common to Figure 1 through Figure 4 (Generic Listing*)	6
Table 2 Parts for XYR 6000 (see Figure 5)	7
Table 3 ST 3000 and XYR 6000 Required/Recommended Steps Common to All Procedures	8
Table 4 ST 3000 Replacement of Meter Body and/or Meter Body O-Ring	8
Table 5 XYR 6000 Replacement of Meter Body and/or Meter Body O-Ring	10
Table 6 ST 3000 and XYR 6000 Process Head Removal/Replacement	12
Table 7 Torque Table - Process Head Bolts/Nuts	13
Table 8 ST 3000 and XYR 6000 Flange Adapter Removal / Replacement	14

Replacement Kits (Parts Illustrations and Listings)

The figure below shows a typical transmitter atop a meter body assembly. Actual appearance may vary.



For ST 3000 parts see **Figure 1, Figure 2 and Table 1.**

For XYR 6000 parts see **Figure 3, Figure 4, Figure 5, Table 1 and Table 2.**

ST 3000 Replacement Parts

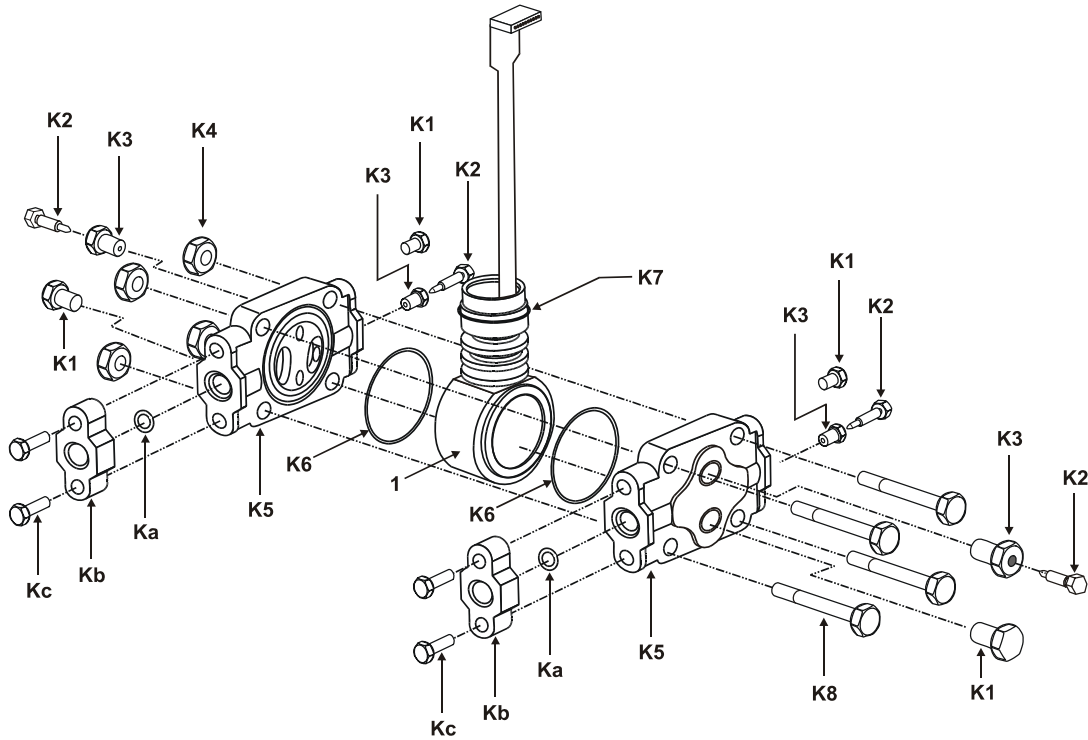


Figure 1 Typical construction for ST3000 models STD110, STD120, STD130, STD170, STD904, STD924, STD930, STD974

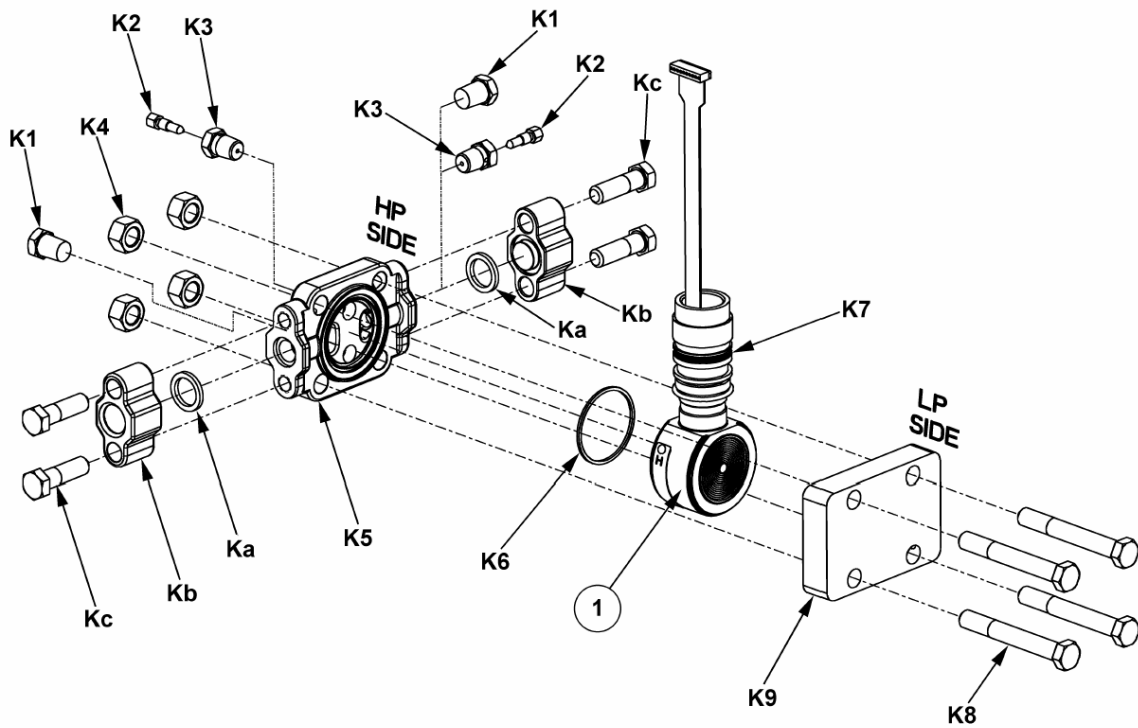


Figure 2 Typical construction for ST3000 models STG944 and STG974

XYR 6000 Replacement Parts

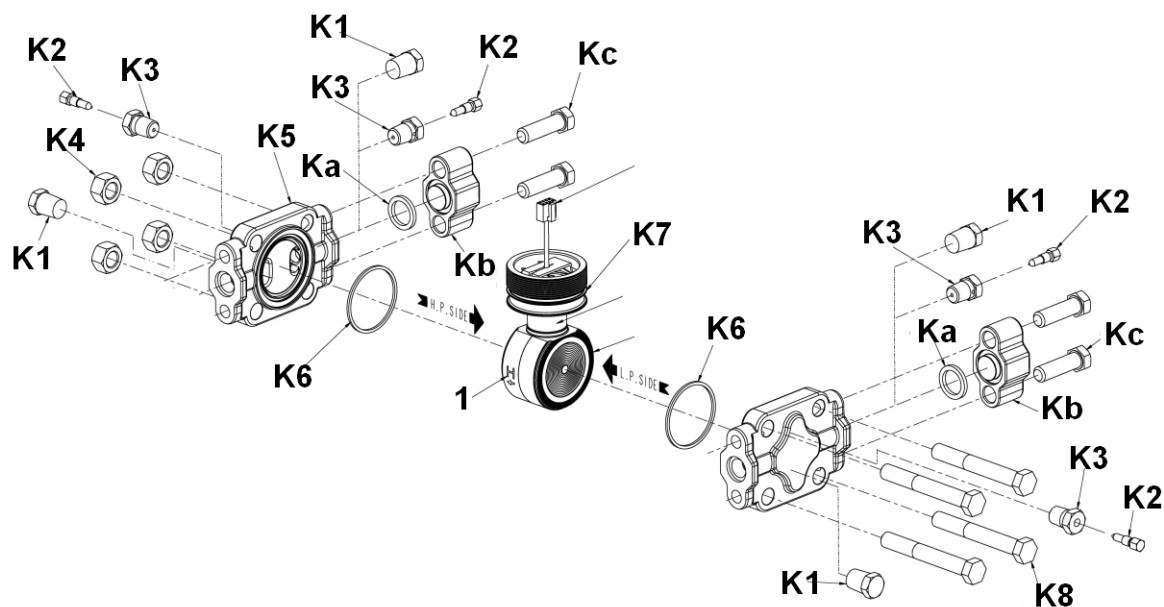


Figure 3 XYR 6000 models STDW924, STDW930, STDW974

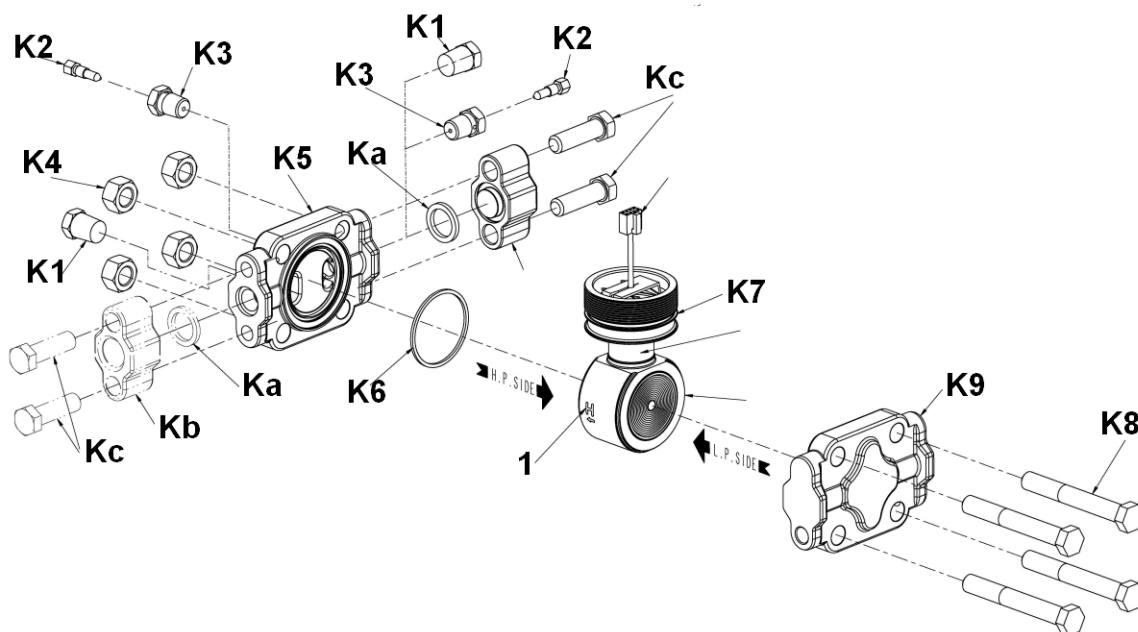


Figure 4 XYR 6000 models STGW944, STGW974

Table 1 Kit parts common to Figure 1 through Figure 4 (Generic Listing*)

Key Number	Description*	Quantity Per kit
51452864* Process Head kit (includes the following items)		
K1	Pipe Plug	2
K2	Vent Plug	1
K3	Vent Bushing	1
K5	Process Head	1
K6	Gasket, Process Head	1
Ka	Gasket, Adapter	1
51452951* Reference Head kit (includes the following items)		
K9	Carbon Steel Blind Reference Head	1
K9	316 SS Blind Reference Head ("HR" Option)	1
51452865* Meterbody Gasket kit (includes the following items)		
K6	Gasket, Process Head	6
Ka	Gasket, Flange Adapter	6
K7	O-ring, meterbody to Electronics Housing	3
51452866* Bolts & Nuts kit (includes the following items)		
Kc	Bolt, Hex head, 7/16-20 UNF x 1.50" lg (Flange Adapter)	4
K4	Nut, Hex, 7/16-14UNC (Process Head)	4
K8	Bolt, Hex, 7/16-14UNC x 3.25" lg (Process Head)	4
51452867* Flange Adapter kit (includes the following items)		
Ka	Gasket, Flange Adapter	2 or 1
Kb	Flange Adapter	2 or 1
Kc	Bolt, Hex, 7/16-20 UNF x 1.5" Lg (Flange Adapter)	4 or 2
51452868* Gasket kit (includes the following items)		
K6	Gasket, Process Head, PTFE	12 (pack)
	(or)	
K6	Gasket, Process Head, Viton	6 (pack)
	(or)	
K6	Gasket, Process Head, Graphite (use only as replacement of existing graphite gasket)	6 (pack)
	(or)	
Ka	Gasket, Flange Adapter, PTFE	6 (pack)
	(or)	
Ka	Gasket, Flange Adapter, Viton	6 (pack)
	(or)	
Ka	Gasket, Flange Adapter, Graphite (use only as replacement of existing graphite gasket)	6 (pack)

*Identifications and descriptions of parts vary with manufacturing materials and methods for specific applications. For detailed parts list refer to the publications for your transmitter. See page 2.

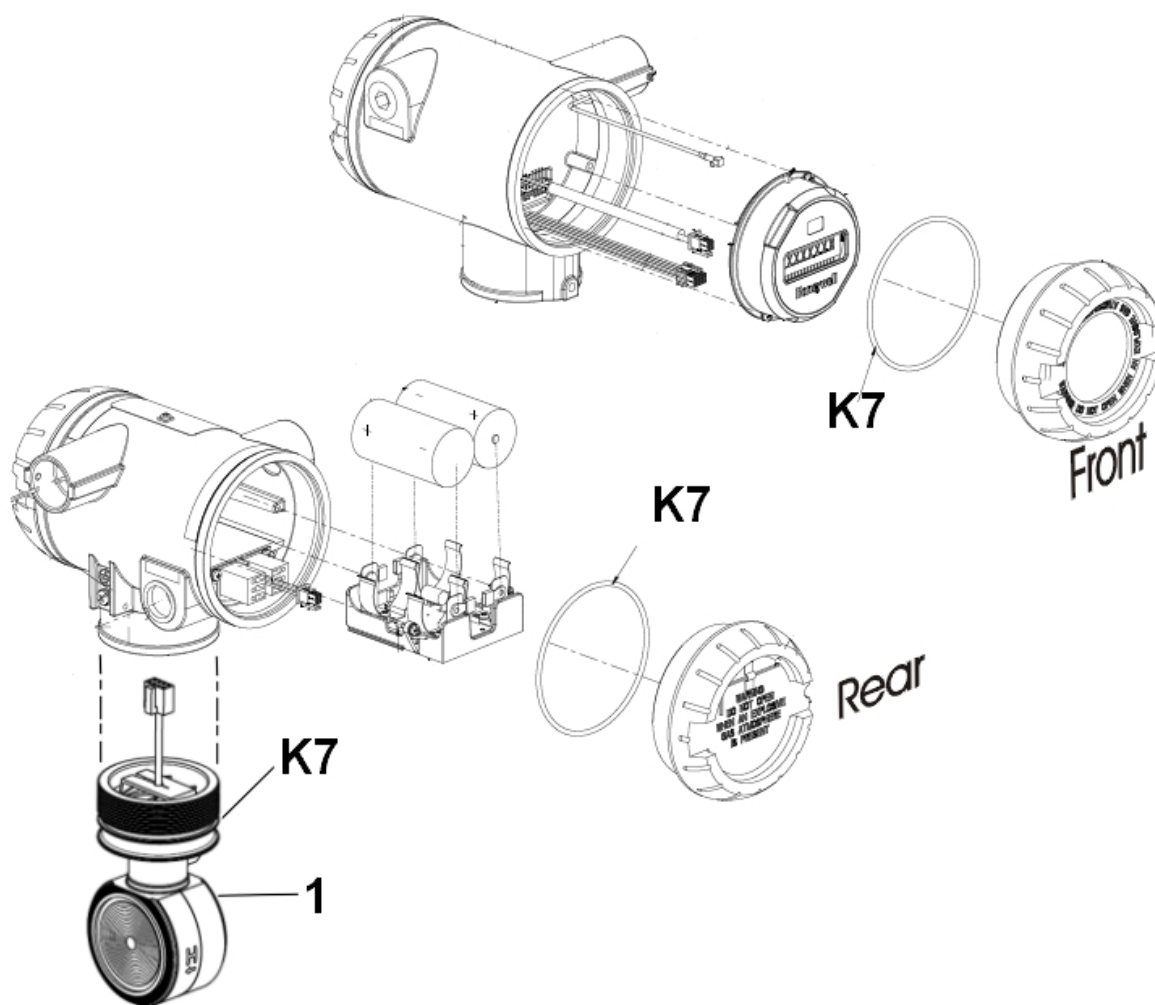


Figure 5 XYR 6000 models STGW94L, STGW97L, STGW98L, STAW94L

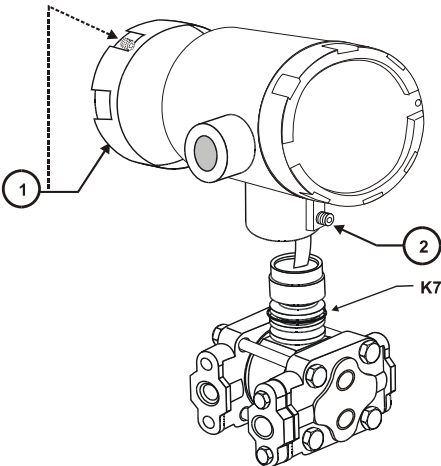


Table 2 Parts for XYR 6000 (see Figure 5)


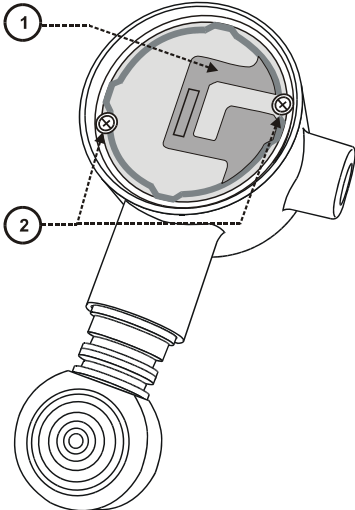
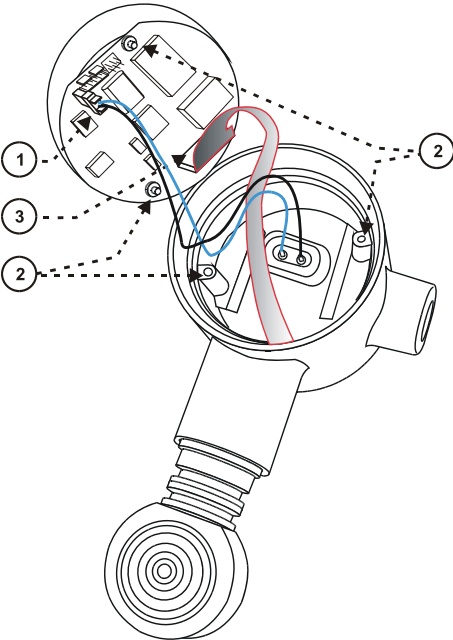
Key No.	Part Number	Description	Qty/ Unit
1	Specify complete model number from nameplate	Meter Body replacement kit includes: Meter body	1
K7	30757503-001	Electronics enclosure seals kit for LGP/LAP models. Kit includes:	
	O-ring for transmitter end caps	6
	O-ring, meter body to electronics housing	3

Table 3 ST 3000 and XYR 6000 Required/Recommended Steps Common to All Procedures

Step	Action
1	Turn off power to the transmitter, and take the transmitter out of service.
2	Disconnect all mechanical and electrical connections.
3	(Recommendation): Move the transmitter to a clean area.

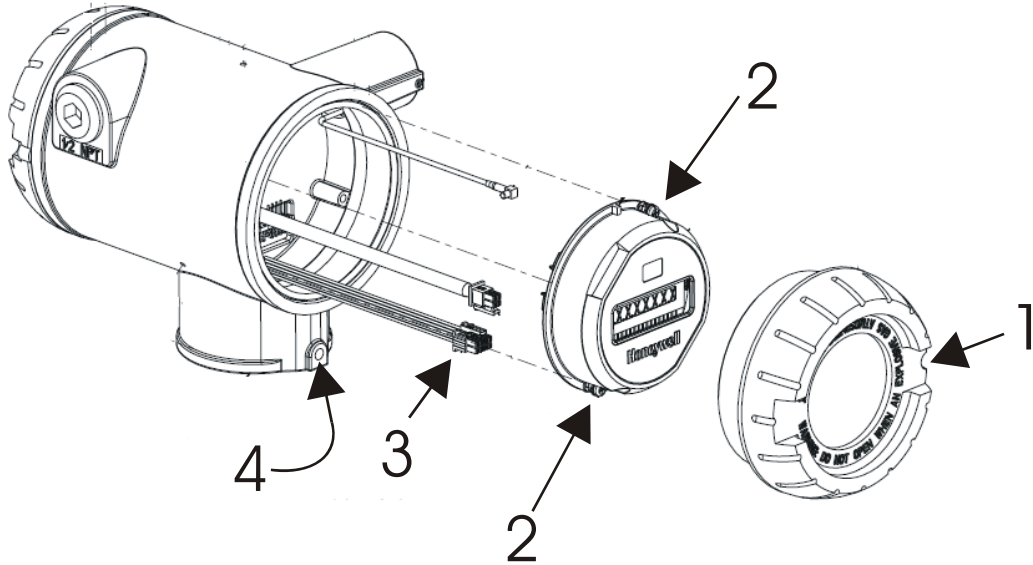
Table 4 ST 3000 Replacement of Meter Body and/or Meter Body O-Ring

Step	Action
Perform the procedure given in Table 3 before performing the following procedure.	
1	<p>Loosen the lock set screw in the end-cap, item 1. Unscrew (counterclockwise) and remove the end cap from the electronics housing.</p> <div><p>Note:</p><p>O-Ring replacement may be done with process heads attached, as indicated at right, or with process heads removed, as shown in Step 3, below.</p></div> 
2	<div></div> <p>If a Smart Meter is included, remove it along with the Printed Wiring Assembly.</p> <div><p>CAUTION</p><p>Use a ground strap or an ionizer when handling the PWA; otherwise, electrostatic discharges can damage circuit components.</p></div> <ul style="list-style-type: none">On the mounting bracket, loosen the two captive screws completely.Carefully pull the PWA out of the housing. 

Step	Action	
3 	<p>CAUTION</p> <p>Use a ground strap or an ionizer when handling the PWA; otherwise, electrostatic discharges can damage circuit components.</p> <p>If a Smart Meter is not included, remove the Printed Wiring Assembly as follows.</p> <p>To ensure correct re-assembly, note the orientation of the bracket indicated in item 1 at right.</p> <ul style="list-style-type: none"> Loosen the two (captive) screws (item 2). Carefully pull the PWA out of the housing. 	
4	<p>Note the placement of the flex tape connection behind the board. It should be replaced in the same way when you re-assemble the transmitter.</p> <p>For correct re-assembly, also note the position of the PWA relative to the captive screws (item 2 at right) in the Electronics housing.</p> <p>At the back of the PWA, unplug:</p> <ul style="list-style-type: none"> power wiring from J1 (item 1) flex tape from J3 (item 3). 	
5	<p>On the outside neck portion of the meter body of the electronics housing, loosen the lock set screw.</p> <p>(Refer to the illustration in Step 1, item 2).</p>	
6	<p>Using care not to twist or snag the flex tape, carefully unscrew (counterclockwise) the Meter Body and remove it from the electronics housing.</p>	
7	<p>If replacing the O-ring only:</p> <p>Replace the O-ring (K7; refer to the illustration in Step 1) on the stem of the meter body. Apply silicone grease such as Dow Corning #33 to the O-ring.</p> <p>If replacing the meter body:</p> <p>First perform the procedure in Table 6 (that is, remove the process heads and replace the head gaskets (K6)). After completing that procedure, return to this table to continue the next step (connection of electronic housing to the new meter body).</p>	

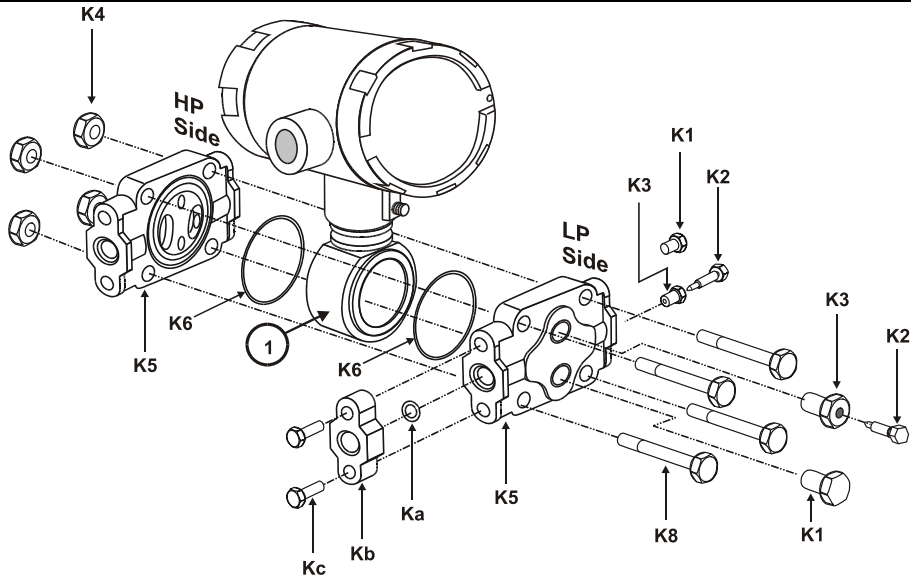
Step	Action
8	Feed the flex tape on the (new or existing) meter body through the neck of the housing, and screw the Meter Body into the Electronics Housing until the bottom of the header portion of the center section is approximately flush with the neck of the electronics housing.
9	Tighten the outside set-screw (refer to item 2 in the illustration in Step 1), and ensure that it is seated in the slot on the meter body stem. Loosen the set-screw a half-turn, rotate the housing to the desired position, and tighten the set-screw.
10	Refer to the illustration in Step 4. Position the flex tape behind the board as it was before removal, and re-connect the flex tape to J3. Re-connect power to J1.
11	Replace the PWA (and Smart Meter, if it is included) in the housing and re-insert the captive screws.
12	Lubricate the O-ring for the end-cap with silicone grease such as Dow Corning #33 or equivalent, and replace the end cap.
13	Place the transmitter back into service.

Table 5 XYR 6000 Replacement of Meter Body and/or Meter Body O-Ring

Step	Action
Perform the procedure given in Table 3 before performing the following procedure.	
1	Loosen the M3 locking set screw on the transmitter's display end-cap. See item 1. Unscrew and remove the end cap. 
2	Loosen the two screws on the display/sensor module. See items 2 in step 1 figure.
3	Disconnect meter body connector from J1 connector on the display/sensor module. See item 3 in step 1 figure. Notice where this wire passes through a hole to the meter body; you will re-insert the wire through this hole when re-attaching the meter body.
4	On the outside neck portion of the meter body of the electronics housing, loosen the lock set screw. See item 4 in step 1 figure.

Step	Action
5	Unscrew the meter body from the transmitter. Remove the meter body, pulling the wire out through the transmitter housing hole.
6	<p>If replacing the O-ring only:</p> <p>Replace the O-ring (K7; refer to the illustration in Step 1) on the stem of the meter body. Apply silicone grease such as Dow Corning #33 to the O-ring.</p> <p>If replacing the meter body:</p> <p>First perform the procedure in Table 6 (that is, remove the process heads and replace the head gaskets (K6)). After completing that procedure, return to this table to continue the next step (connection of electronic housing to the new meter body).</p>
7	Feed the connector on the (new or existing) meter body through the neck of the housing, up the hole to the display. Screw the Meter Body into the Electronics Housing until the bottom of the header portion of the center section is approximately flush with the neck of the electronics housing.
9	Tighten the outside set-screw (item 4 in Step 1 figure), and ensure that it is seated in the slot on the meter body stem. Loosen the set-screw a half-turn, rotate the housing to the desired position, and tighten the set-screw.
10	Re-connect the meter body wire to J1 on the display/sensor module (Item 3 in step 1 figure).
11	Install sensor module. Be sure to orient display/sensor module in the proper viewing orientation before tightening two sensor compartment screws (item 2 in step 1 figure).
12	Lubricate the O-ring for the end-cap with silicone grease such and Dow Corning #33 or equivalent, and replace the end cap.
13	Tighten the M3 locking set screw on the transmitter's display end-cap. See item 1 in step 1 figure.
14	Place the transmitter back into service.

Table 6 ST 3000 and XYR 6000 Process Head Removal/Replacement

Step	Action
<p>Perform the procedure given in Table 3 before performing the following procedure.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>NOTE: This procedure does not require that the Meter Body be removed from the Electronics Housing.</p> </div>	
 <p style="text-align: center;">Note: actual appearance may vary</p>	
1	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Caution: To prevent damage to the diaphragm in the Meter Body, use extreme care when handling the Meter Body (center section) or when placing it on any surface.</p> </div> <p>Loosen and remove the four nuts (K4).</p> <p>Carefully separate the Process Head(s) (K5) from the Meter Body (item 1).</p> <p>Discard the old Gaskets(s) (K6) and Process Head(s).</p>
2	<p>Apply sealant or PTFE Tape to the new bushings (K3) and pipe plugs (K1), and install into the new Process Head. Tighten Bushings and Pipe Plugs to a torque of 58 +/- 2,7 N-m (43 +/- 2 Lb-Ft). If Bushings (K3) require special orientation, then torque further up to an additional 180 degrees of rotation to desired orientation. Tighten Vent/Drain (K2) to 4,0 +/- 0,5 N-m (35 +/- 4 Lb-in).</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Note: If Flange Adapters (Kb) are to be attached, use the procedure given in Table 8.</p> </div>
3	<p>If the old nuts and bolts for the Process Heads will be used, clean and then lubricate them.</p> <p>If new nuts and bolts are to be installed, lubricate them.</p>

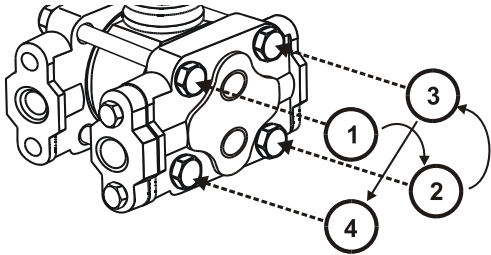
Step	Action	
4	<p>Note: The <i>bolts</i> for the Process Heads (K8) should be on the <i>low-pressure side</i> of the Meter Body, and the <i>nuts</i> (K4) should be on the <i>high-pressure side</i>. (High- and low-pressure sides are marked on the Meter Body.)</p> <p>Carefully assemble the new Gasket(s) and Process head(s) to the Meter Body as shown in the illustration above, and hand-tighten the nuts.</p>	
5	<p>Note: Refer to Table 7 for torque specifications for the Process Heads.</p> <p>Tighten the four nuts in three steps, using a torque wrench in the sequence shown in the illustration and as listed below.</p> <ol style="list-style-type: none"> Tighten all four nuts to approximately 1/3 full torque. Tighten all four nuts to approximately 2/3 full torque. Tighten all four nuts to full torque. 	
7	Place the transmitter back into service.	

Table 7 Torque Table - Process Head Bolts/Nuts

Meterbody Type	Bolt Type		
	51452557-001 (Carbon Steel - standard; no option specified)	5142557-002 and -003 (NACE ["CR" option] and Non-NACE ["SS" option] Stainless Steel)	51452557-004 (B7M Alloy Steel ["B7" option])
51451864XXXX (All Transmitters except Draft Range)	67,8 N•M +/- 3,4 N•M (50.0 Lb-Ft +/- 2.5 Lb-Ft)	56,9 N•M +/- 2,8 N•M (42.0 Lb-Ft +/- 2.1 Lb-Ft)	48,8 N•M +/- 2,4 N•M (36.0 Lb-Ft +/- 1.8 Lb-Ft)
51451864XXX5 (Draft Range Transmitter only)	20,3 N•M +/- 1,0 N•M (15.0 Lb-Ft +/- 0.8 Lb-Ft)	20,3 N•M +/- 1,0 N•M (15.0 Lb-Ft +/- 0.8 Lb-Ft)	20,3 N•M +/- 1,0 N•M (15.0 Lb-Ft +/- 0.8 Lb-Ft)

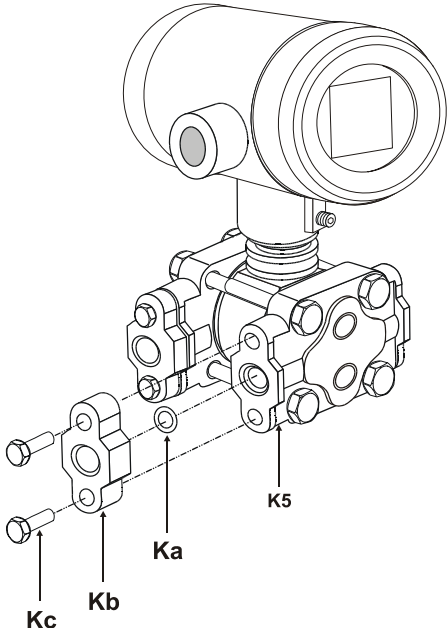
Table 8 ST 3000 and XYR 6000 Flange Adapter Removal / Replacement

Perform the procedure given in Table 3 before performing the following procedure.

NOTE:

This procedure does not require that the Meter Body be removed from the Electronics Housing.

If the Flange Adapters are being replaced in conjunction with procedures for other kits parts (that is, Process heads, etc), follow those procedures and incorporate the following steps.

Step	Action
1	<div> <p>Note: The threaded hole in each Flange Adapter is offset from center. To ensure correct orientation when it is reassembled, make a note of the orientation of the offset relative to each Process Head before removing any adapter.</p> <p>Remove and discard:</p> <ul style="list-style-type: none"> - the two bolts (Kc) that attach the Adapter to the Process Head - Adapter (Kb) - Gasket (Ka) </div> <div>  <p>Note: transmitter shown for context. Actual appearance may vary.</p> </div>
2	Clean the mating surface(s) of the Process Heads.
3	Apply anti-seize lubricating compound to the new bolts, and carefully assemble the new Adapter(s) and Gasket(s) to the Process Head(s).
4	Evenly torque the bolts to 47,5 N•M +/- 2,4 N•M (35 Lb-Ft +/- 1.8 Lb-Ft).
5	Place the transmitter back into service.